

Additional Camera Activities

What's it all about?

Some additional activities for the camera that you may wish to try:

1. Ice War Paint
2. Water Balloons
3. Watching traffic
4. Smoke

Previous knowledge/understanding:

1. The IR camera shows how much IR is coming from each direction
 2. Differences in IR levels are usually due to radiation of IR / the temperature of objects
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1. Ice war paint [could be done within show if you had time]

Materials not provided by AstroBoost.

Set up:

- Camera feed projected to laptop or screen (so that person can see what they look like)
- Ice (made from drinking water)
- Paper towels for people to dry their faces afterwards if they choose

H&S:

- When writing an RA for this activity, consider:
 - Some people may have medical conditions that make touching ice painful

Ask people to draw patterns on their faces with the ice. Ensure younger children don't just do it all over their face. Or get them to draw on each others' faces.

Use the camera to show them what they look like.

2. Water balloons

Remember you won't be able to look at water in a glass vessel, as glass is opaque to mid-IR. The provided balloons are latex, which can cause allergic reactions.

Set up:

- One clear balloon (for air)
- One clear balloon (for water)

Or

- One water half filled with air, half with water (it's possible but can be messy to achieve!)

H&S:

- When writing an RA for this activity, consider:
 - Some people are allergic to latex!! Ask before asking them to touch the balloon.
 - Consider that if the balloon were to burst, latex would travel some distance.
 - Balloon fragments should be cleared as soon as possible due to allergy risk

Ideally, make filling the balloons part of the activity (whether this is sensible will depend on audience size and context).

If using two balloons, ensure they are the same size (so that the rubber/latex is equally stretched on each).

Be aware that the balloons will not be entirely transparent, so ensure you have a clear temperature differential to observe through them.

You can link this absorption of IR by water to:

- Why IR feels warm to us (the water in our bodies absorbs it and is warmed by this energy transfer)
- Problems of observing IR through the atmosphere

Raindrops do partly absorb IR so that especially mid-IR wavelengths are depleted in rainbows. However, raindrops are small and so only a small fraction is absorbed. So rainbows *do* still have a mid-IR band.

I tried filling one with CO₂ from an acid/base reaction but (i) couldn't get the pressure very high, meaning the rubber was not very stretched, and (ii) I'm pretty sure you need a lot more depth of CO₂ to see the absorbing effect.

3. Watching traffic

If you are within safe sight of a road, looking at cars is good fun! You should be able to see where their engine is (or whether it is an electric car). You should also see their wheels heat up when braking.

3. Smoke

If you are at an evening event with a fire or barbecue, you could try looking through the smoke with the camera. This is the perfect demonstration of how mid-IR can see through nebulae. Careful risk assessment required!

AstroBoost Project

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